

British Museum—the Hume, Tweeddale, and other representative series—were undreamt of.

In this instalment, which contains a great part of the Acromyodian Passeres, the arrangement of the families is new and to some extent based upon the plumage of the young birds, a character of unquestionable value as evidence of relationship. Mr. Oates begins with the Corvidæ, which he divides into three subfamilies—Corvinæ, Parinæ (Tits), and Paradoxornithinæ; and the position of the second will come as a shock to a good many old-fashioned systematists. While we think of it we may note, for correction in the errata, a slip of the pen on p. 16, line 19, where “eastwards” should be “westwards.” Wisely, as we think, Mr. Oates has retained the Jackdaw in the genus *Corvus*, and has not placed it under *Colæus*: but, having done this, it seems inconsistent to put the Red-billed and the Yellow-billed Choughs each in a different genus, solely on account of the shape of their beaks. In the Paradoxornithinæ he makes a new genus, *Scorhynchus* (p. 68). The next family—Crateropodidæ—contains *Rhopocichla* (p. 159), *Sittiparus* (p. 171), *Lioparus* (p. 174), *Hilarocichla* (p. 243), *Alophoixus* (p. 259), and *Xanthixus* (p. 274), gg. nn.; while we gather that *Criniger burmanicus* and *Molpastes humii* are here distinguished specifically for the first time, though no “sp. n.” is inserted to catch the eye of the Recorder of Aves. In the Dicuridæ *Dissemurulus*, in the Certhiidæ *Elachura*, are gg. nn.; *Regulus* is raised to the rank of a family; the Sylviidæ, Laniidæ, Oriolidæ, Eulabetidæ, and Sturnidæ follow, and in the last there is a new genus, *Agropsar*. Woodcuts of the typical species or of their heads and feet add to the value of this carefully-written volume, which will for a long time hold its place as the standard work on Indian ornithology.

We would suggest that in the succeeding volumes a little more system with regard to proper names is desirable. As a rule, when we find simply Blyth, Jerdon, Anderson, or Stolickza, we understand that those naturalists are dead; but here, although Col. Godwin-Austen, Dr. Scully, Messrs. Hume, Blanford, Davison, and many others are happily still among us, their names seldom, if ever, have a prefix. In fact Col. Lloyd, Dr. Stewart (dead, we believe), Mr. Gammie, and Mr. Bligh are among the few thus distinguished; and, remembering the wrath-appeasing reply of the subaltern to Lord Gough—“Sir, we never say *General* Alexander or *General* Cæsar”—this exceptional and distant politeness seems somewhat invidious.

MISCELLANEOUS.

Mimicry of the Environment in Pterophryne histrio.

By Mr. J. E. IVES.

THE author stated that his attention had been drawn to the remarkable resemblance of the colour-markings of the Frog-fish to the Sargassum weed in which it lives. This fish is a member of the

Pediculati, and shares the sluggish habits common to the group. On account of the elongation of the carpal bones and other peculiar modifications, they have poor powers of swimming, their structure being adapted to moving about on the bottom, among corals, seaweed, and other low forms of life, which they closely resemble in colour and in many points of outline. By this resemblance they are concealed both from their enemies and their prey. The member of the group best known is the common Fishing-frog, *Lophius piscatorius*, whose remarkable mimicry of its surroundings has been well described by Mr. S. Kent. In the genus *Antennarius*, closely related to *Pterophryne*, the species present wonderful similarity of colour to the forms among which they live. Dr. Günther has paid considerable attention to this genus, and he has also given an excellent figure of *Pterophryne histrio*, under the name of *Antemarius marmoratus**.

Pterophryne histrio is found among the floating masses of Sargassum weed in the warm seas. Here it makes its peculiar nest by binding together the fronds of the sea-weed with gelatinous threads, and depositing the eggs throughout the mass. The ground-colour of the fish is of a pale yellow, and on this light background are darker irregular brownish bands, closely resembling the branched fronds of the Sargassum weed. Along the edges of these darker bands, on the bands themselves, and also to a lesser extent upon the rest of the body, are little white specks of various sizes, on an average about that of a pin's head. On the belly, around the mouth, and on the dorsal spines, are numerous leaf-like cutaneous filaments. Mr. Ives stated that, after careful consideration, he had come to the conclusion that the colour-markings of the fish, and the cutaneous filaments, had been developed in mimicry of the *Spirorbis*-covered Sargassum weed. Professor Benjamin Sharp, who spent last winter in the West Indies, had informed Mr. Ives that on the Sargassum weed, of which he saw large quantities, were invariably scattered great numbers of *Spirorbis* shells. Professor Moseley in "Notes by a Naturalist on the 'Challenger'" (p. 567) speaks of the resemblance in coloration of the forms inhabiting the Sargasso Sea to the Sargassum weed. He attributes the white spots of *Pterophryne histrio* and also of some shrimps and crabs to mimicry of the patches of *Membranipora* that encrust the Sargassum weed. The white spots upon *Pterophryne histrio*, however, are much smaller than the patches of *Membranipora*, and are also much more striking to the eye. This latter fact appears to be due to the delicate fenestrated character of this Bryozoan. The patches of *Membranipora*, also, do not occur in the same abundance upon the Sargassum weed as do the *Spirorbis* shells. Professor Moseley probably confounded the numerous *Spirorbis* shells with patches of *Membranipora*. As far back as 1757, Peter Osbeck, describing this fish which he had met with in the Sargassum weed of the Atlantic Ocean while on a journey to the East Indies, said, with reference to the entanecus filaments, "probably Providence has clothed it in this leaf-like manner, in order

* Journal des Museum Godeffroy, Heft xi. pp. 161-165, pls. 99-106.

that the predaceous fishes might confound it with the sea-weed, and therefore not exterminate it"*.—*Proc. Acad. Nat. Sci. Philad.* Nov. 5, 1889, p. 344.

On Seasonal Dimorphism in Japanese Butterflies.

By DR. ADOLF FRITZE.

Besides the nine Butterflies cited by Pryer † as seasonally dimorphous in Japan, namely *Papilio machaon*, L., *P. xuthus*, L., *P. macilentus*, Janson, *Pieris napi*, L., *Colias hyale*, L., *Terias multiformis*, Pryer, *Vanessa C-album*, L., *V. C-aureum*, L., and *Polyommatus phleas*, L., two new ones occur, according to my investigations in the interior of central Japan in the summer of 1889, namely *Thecla arata*, Brem., and *Vanessa levana*, L.

Thecla arata, Brem., which has hitherto been regarded as single-brooded, has two generations which are markedly seasonally dimorphous, and this seasonal dimorphism shows itself especially upon the underside, while the upperside of both generations is uniformly blue; only the blue of the summer form is darker than that of the winter form. In the latter the ground-colour of the underside is dark greyish green, interrupted by three white bands of different breadth, to which are added on the hind wings several smaller white streaks. The lower angle of the hind wings is orange-red, with four black spots, the two upper ones having a bluish-white nucleus. It is this generation that Pryer has figured. It flies in May and June.

The summer generation, which flies in August, shows on the underside exactly the pattern of the spring generation, but instead of the greyish-green coloration we have here a dark brown, and in place of the white bands and streaks we find light brown ones; the orange-red of the angle of the hind wings is much less intense, and the bluish-white nuclei in the black spots disappear entirely or almost entirely.

Vanessa levana, L.—The seasonal dimorphism of the European form of this species has long been known; it occurs also in the Japanese form, although here other and very remarkable characters occur. Thus, while the summer generation, the so-called *prorsa* form, which flies in August, is exactly like the German form, the German spring generation, the *levana* form, is entirely wanting in central Japan. In its place appears a *prorima* form, which has a rather close resemblance to the form figured by Weismann in his 'Studien zur Descendenztheorie' pl. i. fig. 2. From this the Japanese *prorima* is distinguished chiefly by the greater prominence of the black spots and bands, by several brown spots at the root of the fore wings, and by a straight light brown transverse band upon the hind wings. This generation flies in May and June, and has hitherto been regarded as a distinct species, *Vanessa burejana*, Brem.—*Zool. Anzeiger*, January 13, 1890, p. 12.

* Peter Osbeck, Reise nach Ostindien und China. Aus dem schwedischen übersetzt von J. G. Georgi; Rostock, 1765, p. 400.

† Pryer, 'Rhopalocera Niponica.—A description of the Butterflies of Japan,' Yokohama, 1886 and 1888.